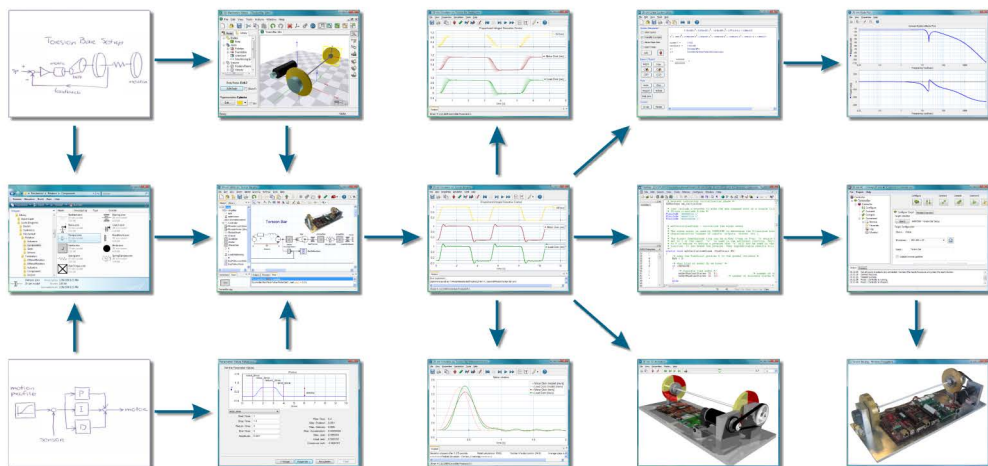


Installation



Software & Hardware

Windows® XP / Vista / 7

Installation

© 2012, Controllab Products B.V.

Author: Ir. C. Kleijn

Disclaimer

This manual describes the installation procedures of the software and hardware packages of Controllab Products B.V.

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Reference

Kleijn, C.
20-sim Installation
Enschede, Controllab Products B.V., 2012

Information

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1 20-sim 4.2

1.1 Versions

20-sim is available in three versions: Viewer, Standard and Professional.

- **Viewer/Demonstration version:** This is a freeware version that allows you to load and run models and evaluate the package. Saving of models is not possible in this version.
- **Standard:** This is the standard version of 20-sim. It has no limitations but only includes the Frequency Domain Toolbox.
- **Professional:** This is the full version of 20-sim with all toolboxes.
- **Trial Version:** This is a time limited Professional version that you can use to try out the program.

The table below shows in detail the options that are available in the three versions:

	Viewer	Standard	Professional
Library Models	v*	v	v
3D Mechanics Toolbox	v*	x	v
Animation Toolbox	v*	x	v
Control Toolbox	v*	x	v
Frequency Domain Toolbox	v*	v	v
Mechatronics Toolbox	v*	x	v
Real Time Toolbox	v*	x	v
Time Domain Toolbox	v*	x	v

v = included

v* = included but no saving possible

x = not included

20-sim is installed, using an Installation Manager that will lock 20-sim to your computer. There are two types of license keys available:

- **Single license key:** A single license key allows 20-sim to be installed on a single computer. Once installed, you can deactivate the license key to install it on another computer. A trial version is a single license that is valid for 14 days.
- **Floating license key:** A floating license key allows multiple users to work with 20-sim at the same time.

1.2 Requirements

20-sim only works on computers that will meet the following requirements:

- Operating System: Windows XP, Vista or 7.
- Processor requirements: 20-sim requires a CPU with SSE2 support. Supported: Intel Pentium 4 and above, AMD Athlon x64 and above.
- Available Disk Space: 350 MB.

1.3 Installing 20-sim (Single)

20-sim can be downloaded from the website www.20sim.com. This is an installation file that will install 20-sim on your computer.

1. **Install 20-sim** and **start** the program.
2. From the **Help** menu select **Registration/Update License**.

The *License Information* dialog will open:

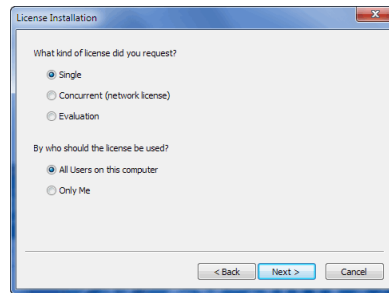


5. Use the *Registration/Update* window to request for a license.

3. If you have a valid license key, press the **Activation** button to enter your license key.

If you do not yet have a valid license key, press the **Trial License** button to request a trial license key or press the **Buy** button to purchase a license.

4. Select **Single** and **who** should use the license.



License installation dialog.

If you have received a license key follow step 5. If you have received a license file, follow step 6.

5. On the next dialog, select ***I received a license key by e-mail*** and enter the **key** in the next dialog.

or

6. On the next dialog, select ***I received a license file*** and enter the **location** of the file in the next dialog.

1.4 Installing 20-sim (Floating)

A floating license (also known as concurrent license or server license) is a license that is shared by more users. A floating license has to be installed by the administrator first and then for the users. You can only install a floating license if you have received a license key.

Administrator

20-sim can be downloaded from the website www.20sim.com. This is an installation file that will install 20-sim on your computer.

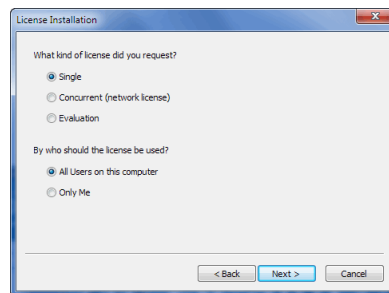
1. **Install 20-sim** and **start** the program.
2. From the **Help** menu select **Registration/Update License**.

The *License Information* dialog will open:



5. Use the Registration/Update window to request for a license.

3. Press the **Activation** button.
4. Select **Floating** and **who** should use the license.



License installation dialog.

You have to enter the license key and a location on the server first. This location on the server should be accessible to all users and should have read/write permission.

5. On the next dialog, select **First Installation** and then enter the **license key** and a **location on the server**.

On the location that you have given, a license file *20sim.lic* will be installed.

6. Remember the **location of this file** because every new user of 20-sim will need to enter it.

You will be asked for confirmation (click **Activate Now**) and activation will be carried out.

Users

Every 20-sim user has to install 20-sim on his local computer and enter the location of the license file.

1. **Install 20-sim** and **start** the program.
2. From the **Help** menu select **Registration/Update License**.
3. Press the **Activation** button.
4. Select **Floating** and **who** should use the license.
5. On the next dialog, select **Administrator already installed server license** and then enter the **license file location** (ask you administrator for the location).

1.5 Classroom Kit

For educational purposes, 20-sim is available as a Classroom Kit. A Classroom Kit lets students and teachers use the software at the educational institute and at home. The use is limited to a maximum of 200 individual users and 1000 users on the network of the educational institute.

A Classroom Kit comes with two types of license keys:

- A *student license key* which may be distributed among students and teachers (max. 200 users).
- A *floating license key* which can be installed at the educational institute (max. 1000 users).

Student License Key

A student license key has a time limitation of one year. Controllab Products B.V. will take care that every year a new student license key is sent to the owner of a Classroom Kit.

1. The student license key has to be stored on a location that is only available for students and teachers (place it on your intranet) to prevent illegal copying.
2. Install 20-sim with the student license key. For installation guidelines see the section on installing a single license.

Floating License Key

The floating license key will have no time limitation. It allows you to use 20-sim on multiple machines on the network.

1. To install a floating license key follow the instructions of the previous section.

1.6 Uninstalling

You can uninstall 20-sim by clicking the *Uninstall* command from the Windows start menu. Uninstalling of 20-sim will not deactivate your license. If you want to move 20-sim to another computer, you have to deactivate your license first before uninstalling.

1.7 Deactivation

If you want to move 20-sim to another computer, you have to deactivate your license key before uninstalling the program. On the new computer you can then install the program and activate the license key again. To deactivate your license key:

1. From the Windows **Start menu** open **20-sim**.
2. From the **Help** menu choose **License Activation**.
3. Press **the Activation button**.
4. Choose **Deactivate Current License**.

You will be asked for confirmation and deactivation will start. After a successful deactivation, your version of 20-sim has turned into the viewer. You can now uninstall the software and reinstall it elsewhere.

2 20-sim 4C 2.0

2.1 Requirements

20-sim 4C only works on computers that will meet the following requirements:

- Operating System: Windows XP, Vista or 7.
- Available Disk Space: 350 MB.
- Ethernet: an ethernet connection is required for external targets.

Further requirements for using 20-sim 4C:

- 20-sim 4.1.2.4 Professional (or higher) installed on the same computer.
- A valid 20-sim 4C license. Contact your local distributor to obtain a valid license. Note that 20-sim 4.1 Professional and the 20-sim 4C 2.0 have separate licenses!

2.2 Installing 20-sim 4C

20-sim 4C can be downloaded from the website www.20sim4C.com. This is an installation file that will install 20-sim 4C on your computer. The first 4 steps are equal for all users. Depending on the type of license key (single, floating) you have to continue differently.


1. **Install 20-sim 4C** on the same computer as 20-sim 4.1 Professional or higher.
2. From the Windows **Start menu** open **20-sim 4C**.

The *License Activation* dialog will open:

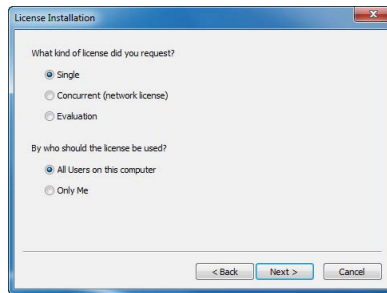


20-sim 4C 2.0 License Activation Dialog.

3. If you have a valid license key, press the **Activation** button to enter your license key.

If you do not yet have a license key, use the e-mail button  to request an trial license or to purchase the software.

4. Select **what kind of license** you have and **who** should use the license.



License installation dialog.

Single License Key

5. On the next dialog, select ***I received a license key by e-mail*** and enter the **key** in the next dialog.

You will be asked for confirmation (click **Activate Now**) and activation will be carried out.

Floating License Key

Administrator

If you are using a license that is shared by more users (floating license, also known as concurrent license or server license), you have to enter the license key and a location on the server first. This location on the server should be accessible to all users and should have read/write permission.

5. On the next dialog, select **First Installation** and then enter the **license key** and a **location on the server**.

On the location that you have given, a license file *20sim4C.lic* will be installed.

6. Remember the **location of this file** because every new user of 20-sim will need to enter it.

You will be asked for confirmation (click **Activate Now**) and activation will be carried out.

Users

Every 20-sim user has to install 20-sim on his local computer and enter the location of the license file.

5. On the next dialog, select **Administrator already installed server license** and then enter the **license file location** (ask you administrator for the location).

2.3 Classroom Kit

For educational purposes, 20-sim 4C is available as a Classroom Kit. A Classroom Kit lets students and teachers use the software at the educational institute and at home. The use is limited to a maximum of 200 individual users and 1000 users on the network of the educational institute.

A Classroom Kit comes with two types of license keys:

- A *student license key* which may be distributed among students and teachers (max. 200 users).
- A *floating license key* which can be installed at the educational institute (max. 1000 users).

Student License Key

A student license key has a time limitation of one year. Controllab Products B.V. will take care that every year a new student license key is sent to the owner of a Classroom Kit.

1. The student license key has to be stored on a location that is only available for students and teachers (place it on your intranet) to prevent illegal copying.
2. Install 20-sim with the student license key. For installation guidelines see the previous section.

Floating License Key

The floating license key will have no time limitation. It allows you to use 20-sim 4C on multiple machines on the network.

1. To install a floating license key follow the instructions of the previous section.

2.4 Uninstalling 20-sim 4C

You can uninstall 20-sim 4C by clicking the **Uninstall** command from the 20-sim 4C start menu. Uninstallation of 20-sim 4C will not deactivate your license. If you want to move 20-sim 4C to another computer, you have to **deactivate your license** first before uninstalling.

2.5 Deactivation

If you want to move 20-sim 4C to another computer, you have to deactivate your license, before uninstalling the program. On the new computer you can then install the program and activate the license.

To deactivate your license:

1. From the Windows **Start menu** open **20-sim 4C**.
2. From the **Help** menu choose **License Activation**.
3. Click on the **Activation** button and then select **Deactivate Current License**.
4. Click **Finish** to deactivate your license. You will be asked to confirm the deactivation and have to click **Deactivate**.

3 Torsion Bar 2.0

3.1 Components

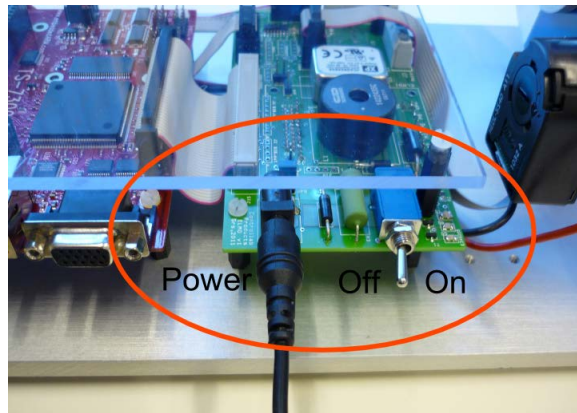
For the proper operation of the Torsion Bar, a PC computer is required that is connected to the Torsion Bar either directly with a cross cable or via a network. On the PC computer, the software packages 20-sim Professional and 20-sim 4C have to be installed. This section describes how to make the various installations. In the next sections we will run two models to test if the Torsion Bar is working properly.

Power

1. **Check** if the correct **power adapter** was supplied.

The Torsion Bar is delivered with a power adaptor that yields 24 V output. Depending on the country, a 220 V or a 110 V input is used. Check if the power adaptor has the correct input voltage.

2. **Plug in** the power adapter.



Plug in the power cable just below the motor. Right of the power connector is the power switch.

The output of the power adaptor can be connected just below the motor. The input of the power adaptor has to be connected to you local 220 V or 110 V supply.

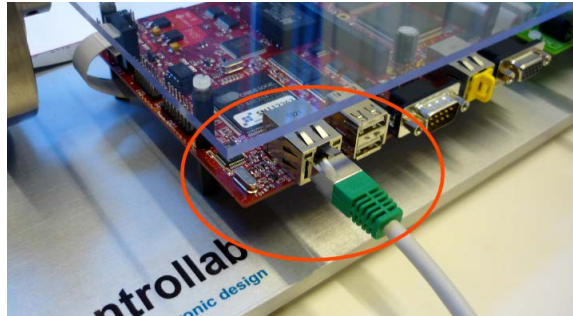
3. **Switch on** the power.

The power switch is located right to the power cable connector. If you switch it on some LED's on the controller board should be turned on.

Cross Cable

For the communication between the Torsion Bar and the host PC you can use a cross cable or a network cable. A cross cable is a direct connection with the PC. A network cable is indirect connection because it connects the Torsion Bar with a network switch or other network components. Using a cross-cable to connect the host PC to the Torsion Bar is the recommended approach for first time users.

1. Plug the **cross cable** in the most **left connector** of the controller board.



The left connector is used for the network connection.

2. The other end of the **cross cable** must be plugged into your **PC computer**.

It may take several minutes before your PC will notice that a cross cable is connected. So be patient if 20-sim 4C cannot make a connection immediately.

Network Cable

1. Plug in the network cable in the most left connector of the controller board.
2. The other end of the network cable must be plugged in into a switch or hub of the network.

Use a 'normal' network cable to connect the Torsion Bar Setup via a switch or hub to your network. If your network provides a DHCP server the configuration is automatic. If your network does not provide a DHCP server make sure your network is configured in the 192.168.1.x range and that your PC computer has a proper connection to the network.

3.2 Installation

On the PC computer two software packages have to be installed: 20-sim 4.1 Professional or higher and 20-sim 4C 2.0 or higher:

1. **Install 20-sim 4.1 Professional** or higher. For installation guidelines, see the 20-sim Getting Started manual.
2. **Install 20-sim 4C 2.0** or higher. For installation guidelines, see the 20-sim 4C Reference manual.

20-sim Models

In the examples, 20-sim models are used to generate C-code. These models have to be copied onto your PC computer.

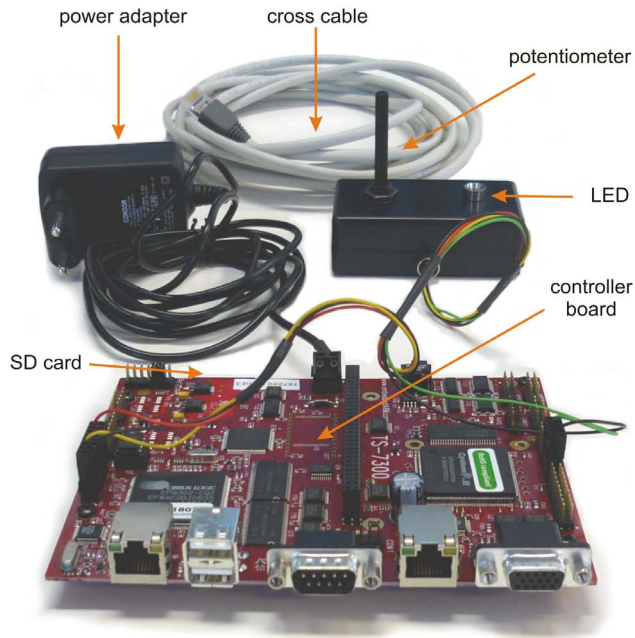
1. **Copy the example files** from the CD-Rom (e.g. *D:\Torsion Bar\20-sim*.**) **to a local folder** (e.g. *Documents\Torsion Bar\20-sim*.**).

Please check that you have read and write access to the local folder.

4 TS-7300 Demonstration Kit 1.0

4.1 Components

The TS-7300 Demonstration Kit contains various components.



The components that come with the TS-7300 Demonstration Kit.

Controller Board

The controller board is the TS-7300 of Technologic Systems. The board is equipped with a SD-card which contains a Linux-RTAI operating system. The ARM-9 CPU of the board uses this operating system to run the models. The maximum sample frequency of a model depends on the complexity of the model. In practice the upper limit is 2kHz for simple models and 200 Hz for more complex models.

20-sim 4C ready SD Card

The TS-7300 board contains a slot for an SD-Card. The SD card that is delivered with the kit contains a real time operating system (RTAI Linux) and a target daemon, to perform the communication between 20-sim 4C and the TS-7300 board. The SD Card makes the board plug-and-play. As soon as you power it up, the software will be started and the board is ready to run.

Potentiometer

The potentiometer is connected with the AD input of the board. The potentiometer will give a voltage that can range between a minimum value of 0.15 V and a maximum value of 3.15 V.

External LED

The LED is fed by the PWM (Pulse Width Modulation) output of the board. The PWM signal has a range of -1 to +1. Both negative and positive values will make the LED shine. A zero value will give minimum intensity (the LED is out) and a value of -1 or 1 will give a maximum intensity (LED shines brightly).

Power Adapter

The power adaptor requires an input voltage of 100 to 240V alternating current, with a maximum current of 0.35 A and a frequency of 50 or 60 Hz. The adaptor gives a DC output voltage of 5 V and a maximum current of 2.5 A.

Cross Cable

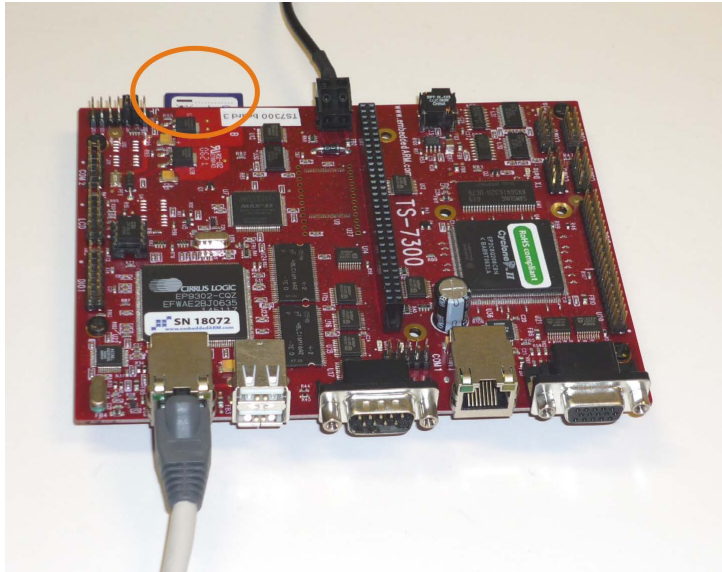
A cross cable is available to connect your PC to the TS-7300 board directly, without the need of a network switch.

4.2 Installation

To run the TS-7300 board, a PC computer should be connected, either with a cross cable or via a network. On the PC computer, the software packages 20-sim Professional and 20-sim 4C have to be installed. This section describes how to make the various installations.

SD-Card

1. Check if the **SD-Card** was **inserted**.



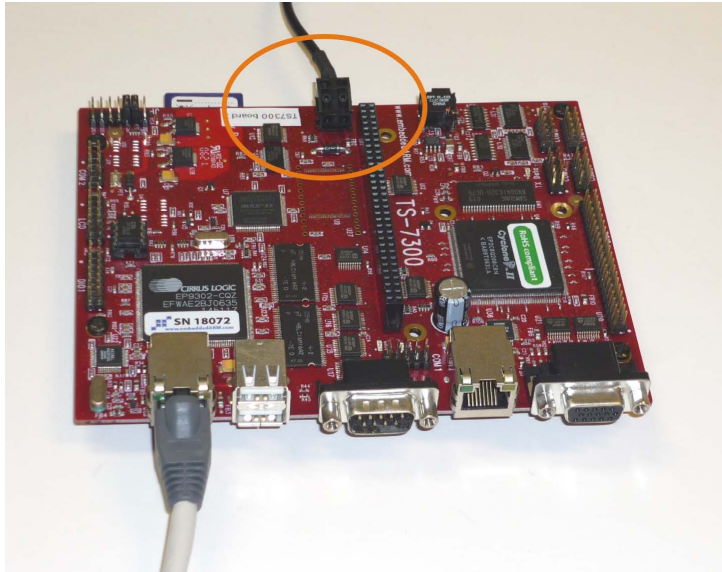
Check if the SD-Card is inserted in the board.

Power

1. Check if the correct **power adapter** was supplied.

The Demonstration Kit is delivered with a power adaptor that yields 5 V output. Depending on the country, a 220 V or a 110 V input is used. Check if the power adaptor has the correct input voltage.

2. **Connect** the power adapter to the board as indicated in the next picture.



Connect the power adaptor to the board at the opposite side of the network connector.

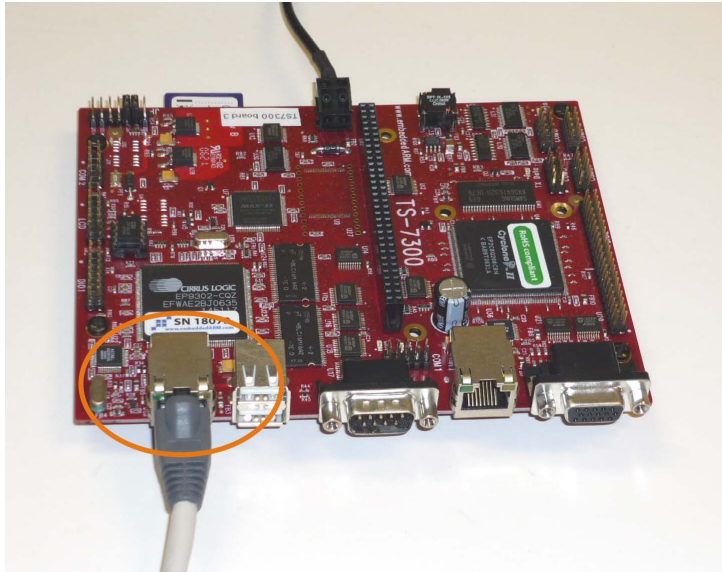
3. **Switch on** the power.

You switch on the power by putting the power plug of the power adapter into the local grid. As soon as the power is on, the LED's on the controller board should start to shine. The board will now automatically boot from the SD card.

Cross Cable

The communication between the TS-7300 board and the host PC is established with a cross cable or a network cable. A cross cable is used for a direct connection with the PC. A network cable is used for an indirect connection through a network switch or other network components. Using a cross-cable to connect the host PC to the TS-7300 board is the recommended approach for first time users.

1. **Plug in** the **cross cable** in the most left connector of the controller board.



Plug in the cross-cable in the left connector.

To most left connect or is used for both the cross cable and network cable.

2. The **other end** of the cross cable must be plugged into your **PC**.

It may last several minutes before your PC will notice that a cross cable is connected. So be patient if 20-sim 4C cannot make a connection immediately.

Network Cable

1. **Plug in the network cable** in the most left connector of the controller board.
2. The **other end** of the network cable must be plugged in **into a switch or hub of the network**.

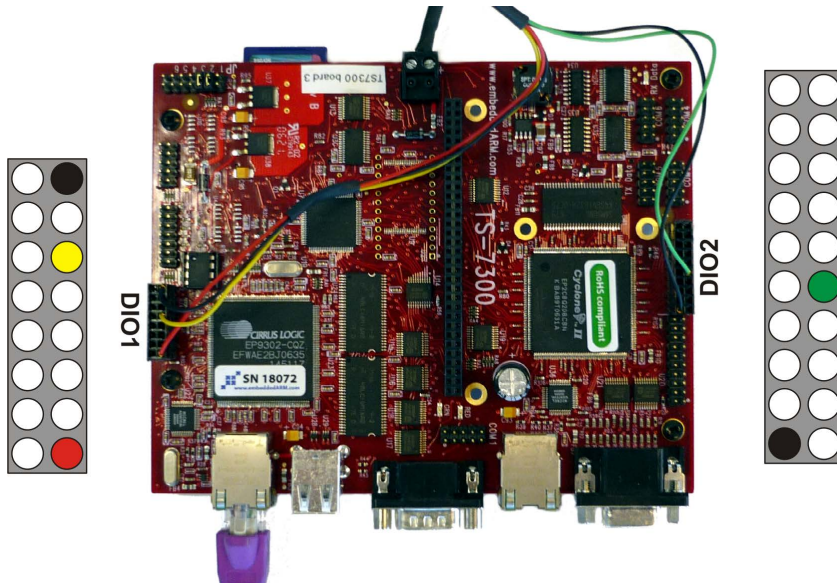
Use a 'normal' network cable to connect the TS-7300 board Setup via a switch or hub to your network. If your network provides a DHCP server the configuration is automatic. If your network does not provide a DHCP server make sure your network is configured in the 192.168.1.x range and that your PC computer has a proper connection to the network.

Potentiometer and LED

1. **Check** if the **potentiometer** and the **LED** connectors are mounted properly .

The potentiometer connector has to be mounted on the DIO1 pins as indicated

in the next figure. The LED connector has to be mounted on the DIO2 right pins.



The correct mounting of the connectors.

Software

On the PC computer two software packages have to be installed: 20-sim 4.0 Professional or higher and 20-sim 4C 1.1 or higher.

1. **Install 20-sim 4.0 Professional or higher.** For installation guidelines, see the 20-sim Getting Started manual.
2. **Install 20-sim 4C 1.1 or higher.** For installation guidelines, see the 20-sim 4C Reference manual.

20-sim Models

In the examples, 20-sim models are used to generate C-code. These models have to be copied onto your PC computer.

1. **Copy the example files from the CD-Rom** (e.g. D:\TS-7300 Demonstration Kit\20-sim*.*) to a local folder (e.g. C:\My Documents\TS-7300 Demonstration Kit\20-sim*.*)

Please check that you have **read and write access** to the local folder. Therefore we advise to copy the files to the Windows "**My Documents**" folder.

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This manual describes the installation procedures for all products of Controllab Products B.V.

